THE FIRST NATURALIZED OCCURRENCE OF THE CANNACEAE FAMILY IN THE ARKANSAS (U.S.A.) FLORA, WITH ADDITIONAL NEW AND NOTEWORTHY ANGIOSPERM RECORDS FOR THE STATE

Brett E. Serviss

Department of Biology
Henderson State University
Arkadelphia, Arkansas 71999–0001, U.S.A.
servisb@hsu.edu

James H. Peck

P. O. Box 705
Cedar Key, Florida 32625, U.S.A.
jhpeck@ualr.edu

Tiffany A. Graves

Department of Biology
Henderson State University
Arkadelphia, Arkansas 71999–0001, U.S.A.
TR180094@reddies.hsu.edu

ABSTRACT

Two species of monocotyledonous angiosperms, *Canna indica* L. and *Miscanthus sinensis* Anderss., are reported as new for Arkansas. The *Canna indica* record is the first documentation of the Cannaceae family in the state's flora outside of cultivation. Two additional species of angiosperms, *Deutzia scabra* L. and *Miscanthus sacchariflorus* (Maxim.) Hack., are documented for only their second occurrences in the state.

RESUMEN

Se dan como nuevas para Arkansas dos especies de monocotiledóneas, *Canna indica* L. y *Miscanthus sinensis* Anderss. La cita de *Canna indica* es la primera documentada de la familia Cannaceae para la flora del estado fuera de cultivo. Dos especies adicionales de angiospermas, *Deutzia scabra* L. y *Miscanthus sacchariflorus* (Maxim.) Hack., se documentan como segundas occurrencias en el estado.

INTRODUCTION

The Cannaceae, or canna family, is a group of monocotyledonous angiosperms represented by a single genus, *Canna*, and about 10 species of perennial, rhizomatous herbs, principally distributed over subtropical and tropical regions of the Americas. The precise native range of the genus, however, is difficult to determine, as many species of *Canna* are, at present, distributed over subtropical and tropical regions worldwide (Kress & Prince 2000; Wu & Kress 2000). Species of *Canna* are important as ornamentals for their showy, colorful flowers, large foliage leaves, and ease of cultivation. The U.S. flora boasts two native species of *Canna*, *C. flaccida* Salisb. and *C. glauca* L., along with the well-naturalized introduction, *C. indica* L. Other *Canna* species and hybrid taxa have been introduced via the horticultural trade, and along with the aforementioned species, are frequently cultivated in the southeastern U.S., including Arkansas (Bailey 1949; Bailey & Bailey 1976; Kress & Prince 2000). *Canna* species reproduce by seed and/or via vegetative/clonal reproduction from an extensive rhizome system. Vegetative reproduction can generate entire colonies of plants, allowing rapid establishment of populations, persistence long after cessation of cultivation practices, and potential spread and naturalization from areas of cultivation. Additionally, seeds or rhizome fragments can also be dispersed through natural or anthropogenic means, potentially resulting in the establishment of remote escaped populations. The origin of the *Canna indica* population in Arkansas is not known; however, plants were apparently not persisting from cultivation and were observed spreading at the site, where both reproductively mature and smaller plants were present.

Though documented outside of cultivation in several southeastern states, and sometimes cultivated in Arkansas, our discovery of *C. indica* represents the first occurrence of the Cannaceae family outside of cultivation in the state (Kress & Prince 2000; Arkansas Vascular Flora Committee 006; Gentry et al. 2013; SDA, NRCS 2014).

ADDITIONS TO THE ARKANSAS FLORA

Canna indica L. (Cannaceae), Indian shot. *Canna indica* is a perennial, rhizomatous herb that is considered to be native to the neotropics, although its precise native range is obscure. At present, it is widely cultivated and naturalized throughout the subtropics and tropics (Kress & Prince 2000; Wu & Kress 2000). *Canna indica* is also well-established in the U.S. flora from eastern Texas and Louisiana to Florida and the Carolinas (Kress & Prince 2000; USDA, NRCS 2014). In addition to ornamental use, *C. indica* is sometimes grown for its edible rhizomes which are rich in starch (Bailey 1949; Wu & Kress 2000).

Voucher specimen: **ARKANSAS. Pulaski Co.:** a few scattered plants with flowers, escaped and "seeding" in other plants—some plants smaller, Boyle Park vicinity, Cantrell Hill, wooded bluff and ravine above park, deciduous forest, Little Rock, 12 Sep 2002, *Peck 2002110* (HEND).

Miscanthus sinensis Anderss. (Poaceae), Maiden grass; Chinese silvergrass. *Miscanthus sinensis* is a caespitose perennial that is native to China, Japan, and Korea (Hitchcock 1950; Barkworth 2003; Chen & Renvoize 2006). It is naturalized over much of the eastern U.S. from Louisiana, Missouri, and Illinois to New York southward to Florida. It has also been documented from California and Colorado (Barkworth 2003; USDA, NRCS 2014). *Miscanthus sinensis* is readily available through the horticultural trade, frequently encountered in cultivation, and has become invasive in several states (Barkworth 2003; Smith 2008; Quinn et al. 2010; Meyer 2011). The origin of the Garland County plant of *M. sinensis* is unknown, but no other plants of *M. sinensis* were observed in the vicinity, nor was there any evidence of cultivation. The plant was well-established and thriving when discovered.

Voucher specimen: **ARKANSAS. Garland Co.:** one plant along roadside, Hwy. 70 E of Hot Springs near bypass, 3 Nov 2006, *Peck 06-777* (HEND).

SECOND OCCURRENCES IN THE ARKANSAS FLORA

Deutzia scabra L. (Hydrangeaceae), Roughleaf deutzia. *Deutzia scabra* is a deciduous, scandent shrub that is native to China and Japan (Bailey 1949). It is naturalized in the eastern U.S. from Illinois westward to New York and Vermont, and southward to North Carolina. It has also been documented from Utah and Florida (USDA, NRCS 2014). *Deutzia scabra* has only previously been documented in Arkansas from Garland County.

Voucher specimen: **ARKANSAS. Clark Co.:** several scandent shrubs from less than 1 m to more than 3 m (a few climbing into the lower canopy) growing along banks of Mill Creek, semi-wooded riparian zone, University Drive and Hwy. 7/67, Arkadelphia, 19 Sep 2013, *Serviss 8049* (HEND).

Miscanthus sacchariflorus (Maxim.) Hack. (Poaceae), Amur silvergrass. *Miscanthus sacchariflorus* is a rhizomatous perennial that is native to China, Japan, Korea, and Russia (Hitchcock 1950; Barkworth 2003; Chen & Renvoize 2006). It is naturalized in the north central and northeastern U.S. from western Nebraska and Missouri to Minnesota, New York, and Connecticut (Barkworth 2003; USDA, NRCS 2014). *Miscanthus sacchariflorus* has only previously been documented in Arkansas from Prairie County.

Voucher specimen: **ARKANSAS. Garland Co.:** a few plants along shoreline, south shoreline of Lake Hamilton near Andrew Hulsey State Fish Hatchery, 20 Oct 2006, *Peck 06-726* (HEND).

KEY TO ARKANSAS SPECIES OF *MISCANTHUS*

Miscanthus sacchariflorus and *M. sinensis* are morphologically similar, but can be distinguished using the following key.

1. Spikelets prominently awned; trichomes of callus about as long as spikelet _____ **M. sinensis**
1. Spikelets generally lacking awns; trichomes of callus about two times longer than spikelet _____ **M. sacchariflorus**

ACKNOWLEDGMENTS

We sincerely thank Brent Baker (Arkansas Natural Heritage Commission) and Barney Lipscomb (Botanical Research Institute of Texas) for their helpful comments and suggestions regarding this paper. We also thank

the Henderson State University Biology Department and the University of Arkansas at Little Rock Biology Department for supporting this work.

REFERENCES

Arkansas Vascular Flora Committee. 2006. Checklist of the vascular plants of Arkansas. Arkansas Vascular Flora Committee. Fayetteville, Arkansas, U.S.A.

Bailey, L.H. 1949. Manual of cultivated plants most commonly grown in the continental United States and Canada, Revised Edition. MacMillan Company, New York, New York, U.S.A.

Bailey, L.H. & E.Z. Bailey. 1976. Hortus Third: A concise dictionary of plants cultivated in the United States and Canada. Vol. 2. MacMillan Company, New York, New York, U.S.A.

Barkworth, M.E. 2003. *Miscanthus*. In: Flora of North America Editorial Committee, eds. 1993+. Flora of North America north of Mexico. 16+ vols. Oxford University Press, New York, U.S.A., and Oxford, U.K. 25:616–620.

Chen, S. & S.A. Renvoize. 2006. *Miscanthus*. In: Flora of China Editorial Committee, eds. 2003. Flora of China. Vol. 22 (Poaceae). Science Press, Beijing, China, and Missouri Botanical Garden Press, St. Louis, Missouri, U.S.A. Pp. 581–583.

Gentry, J.L., G.P. Johnson, B.T. Baker, C.T. Witsell, & J.D. Ogle, eds. 2013. Atlas of the vascular plants of Arkansas. University of Arkansas Herbarium. Fayetteville, Arkansas, U.S.A.

Hitchcock, A.S. 1950. Manual of the grasses of the United States. Second Edition revised by Agnes Chase. Miscellaneous Publication No. 200. U.S. Government Printing Office, Washington, D.C., U.S.A.

Kress, W.J. & L.M. Prince. 2000. Cannaceae. In: Flora of North America Editorial Committee, eds. 1993+. Flora of North America north of Mexico. 16+ vols. Oxford University Press, New York, U.S.A., and Oxford, U.K. 22:310–314.

Meyer, M. 2011. *Miscanthus*: Ornamental and invasive grass. (http://miscanthus.cfans.umn.edu/default.htm, Accessed on 24 Apr 2014.). University of Minnesota, St. Paul, Minnesota, U.S.A.

Quinn, L.D., D.J. Allen, & J.R. Stewart. 2010. Invasiveness potential of *Miscanthus sinensis*: Implications for bioenergy production in the U.S. GCB Bioenergy 2:310–320.

Smith, C. 2008. Invasive exotic plants of North Carolina. North Carolina Department of Transportation, Raleigh, North Carolina, U.S.A.

USDA, NRCS. 2014. The PLANTS Database (http://plants.usda.gov, Accessed on 23 Apr 2014.). National Plant Data Team, Greensboro, North Carolina, U.S.A.

Wu, D. & W.J. Kress. 2000. Cannaceae. In: Flora of China Editorial Committee, eds. 2003. Flora of China. Vol. 24 (Flagellariaceae through Marantaceae). Science Press, Beijing, China, and Missouri Botanical Garden Press, St. Louis, Missouri, U.S.A. P. 378.